WHAT IS CLAIMED AND DESIRED TO BE SECURED BY LETTERS PATENT OF THE UNITED STATES IS:

1. A method of preparing a packet communication, comprising the steps of:

determining a modulation scheme for each data field of a set of data fields;

placing an indication of the determined modulation schemes in a super frame header;

modulating each of the data fields according to the determined modulation schemes; and

transmitting the super frame header and each of the modulated data fields.

2. The method according to Claim 1, wherein said indication is an index that identifies a set of at least one of a modulation format, symbol rate, and FEC scheme to be used on the data packets.

3. The method according to Claim 2, further comprising the step of transmitting a list of indexes and corresponding modulation schemes prior to transmitting the super frame header and data packets.

4. The method according to Claim 1, wherein said modulation schemes are at least one of QPSK, QAM 16, and QAM 64.

5. The method according to Claim 1, wherein said step of transmitting comprises transmitting said header and data packets using OFDM.

6. A method of dynamic modulation in a communication system, comprising:

preparing a header that indicates a modulation scheme of at least one data packet;

modulating the data packets according to the modulation scheme; and

transmitting the header and data packets.

7. The method according to Claim 6, wherein the modulation scheme includes at least one of a modulation format, symbol rate, and FEC scheme to be used on the data packets.

8. The method according to Claim 7, wherein said modulation scheme is one of QPSK, QAM16, and QAM 64.

9. The method according to Claim 6, wherein said step of transmitting comprises transmitting said header and data packets using OFDM.

10. The method according to Claim 6, further comprising the steps of:

receiving a status message transmitted from a receiver; and

selecting the modulation scheme based on the received status message.

11. The method according to Claim 10, wherein said status message includes CNR information describing a Carrier to Noise Ratio of transmissions previously received by the receiver.

12. The method according to Claim 10, wherein said status message includes error count information describing a number of errors detected in transmissions received by the receiver.

13. The method according to Claim 12, wherein said error count is a bit error rate detected in transmissions received by the receiver.

14. A method of receiving dynamically modulated data packets, comprising the steps of:

receiving header data containing a modulation scheme used to modulate at least one data packet;

receiving the data packets; and

demodulating the data packets according to the modulation scheme contained in the header data.

15. The method according to Claim 14, wherein the modulation scheme includes at least one of a modulation format, symbol rate, and FEC scheme to be used on the data packets.

16. The method according to Claim 15, wherein said modulation scheme is one of QPSK, QAM16, and QAM 64.

17. The method according to Claim 14, wherein said steps of receiving header data and receiving the data packets comprises receiving said header and data packets using OFDM.

18. The method according to Claim 14, further comprising the steps of:

preparing a status message indicating a quality of transmissions received; and

transmitting the status message.

19. The method according to Claim 18, wherein said status message includes error count information describing a number of errors detected in the transmissions received.

20. A method for dynamic downstream communication in a broadband wireless access system, comprising:

transmitting a first packet from a wireless hub to a wireless modem utilizing a first downstream modulation type of a plurality of downstream modulation types;

receiving the first packet at the wireless modem;

demodulating the first packet at the wireless modem according to the first downstream modulation type;

transmitting a second packet from the wireless hub to the wireless modem utilizing a second downstream modulation type of the plurality downstream modulation types that is different than the first downstream modulation type;

receiving the second packet at the wireless modem; and

demodulating the second packet at the wireless modem according to the second downstream modulation type.

21. The method of Claim 20, wherein the second packet is a next data packet transmitted from the wireless hub to the wireless modem after the first packet.

22. The method of Claim 20, further comprising

transmitting a third packet from the wireless hub to the wireless modem utilizing the first downstream modulation type of the plurality downstream modulation types, wherein the third packet is transmitted prior to transmission of the second packet;

receiving the third packet at the wireless modem; and

demodulating the third packet at the wireless modem according to the first downstream modulation type.

23. The method of Claim 20, further comprising the steps of

identifying the first downstream modulation type by reading a portion of the first packet comprising an identity of the first downstream modulation type; and

identifying the second downstream modulation type by reading a portion of the second packet comprising an identity of the second downstream modulation type.

24. The method of Claim 20, further comprising

determining at the wireless modem a carrier to noise ratio of a carrier signal utilized to transmit the first packet;

transmitting the carrier to noise ratio of the carrier signal utilized to transmit the first packet from the wireless modem to the wireless hub; and

determining at the wireless hub the second modulation type based upon the carrier to noise ratio.

25. The method of Claim 24 further comprising transmitting an in-phase pilot signal as part of a data portion of the first packet and transmitting an in phase pilot signal as part of a data portion of the second packet, wherein the carrier frequency is determined by the wireless modem-by utilizing the in-phase pilot signal.

26. The method of Claim 20 further comprising transmitting a training packet from the wireless hub to the wireless modem.

27. A carrier signal modulated with an information signal for communicating between two wireless devices, the information signal comprising a header portion and a data portion, the header portion comprising a modulation identity portion comprising information identifying a modulation type of a plurality of modulation types utilized to modulate the data portion of the information signal.

28. The carrier signal modulated with the information signal for communicating between two wireless devices of Claim 27 wherein the header portion further comprises timing and synchronization for the particular information signal.

29. The carrier signal modulated with the information signal for communicating between two wireless devices of Claim 27 wherein the data portion comprises a in-phase pilot signal that is capable of being utilized to determine the frequency of the carrier signal.

30. The carrier signal modulated with the information signal for communicating between two wireless devices of Claim 27 wherein the data portion comprises a fixed data pattern and wherein the information signal is utilized as a training signal.

31. The carrier signal modulated with the information signal for communicating between two wireless devices of Claim 27 wherein the header portion is modulated utilizing a first type of modulation and the data portion is modulated utilizing a second type of modulation different than the first type of modulation.

32. The method according to Claim 27, wherein said computer instruction are compiled computer instructions stored as an executable program on said computer readable media.

13. The method according to Claim 20, wherein said method is embodied in a set of computer readable instructions stored in an electronic signal.